

# GRANT & HACKH'S CHEMICAL DICTIONARY

[American, International, European and British Usage]

*Containing the Words Generally Used in Chemistry,  
and Many of the Terms Used in the Related  
Sciences of Physics, Medicine, Engineering,  
Biology, Pharmacy, Astrophysics,  
Agriculture, Mineralogy, etc.*

*Based on Recent Scientific Literature*

FIFTH EDITION

*Completely Revised and Edited by*

**ROGER GRANT**

*M.A., D. de l'U., Ph.D., C. Chem., M.R.S.C. Consultant*

**CLAIRE GRANT**

*M.B., B.S., M.R.C.P.E. Medical Practitioner*

McGRAW-HILL BOOK COMPANY

*New York St. Louis San Francisco Auckland Bogotá  
Hamburg London Madrid Mexico  
Milan Montreal New Delhi Panama  
Paris São Paulo Singapore  
Sydney Tokyo Toronto*

BEST AVAILABLE COPY

Library of Congress Cataloging-in-Publication Data

Hackh, Ingo W. D. (Ingo Waldemar Dagobert), 1890-1938.  
Grant & Hackh's chemical dictionary.

Rev. ed. of: Chemical dictionary. 4th ed. 1969.

I. Chemistry—Dictionaries. I. Grant, Roger L.  
II. Grant, Claire. III. Title. IV. Title: Grant &  
Hackh's chemical dictionary. V. Title: Chemical  
dictionary.

QD5.H3 1987 540'.3 86-7496  
ISBN 0-07-024067-1

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234567890 DOCD0C 943210

ISBN 0-07-024067-1

The previous edition of this book was *Hackh's Chemical Dictionary*,  
4th ed., published by McGraw-Hill in 1969. It was prepared by Dr.  
Julius Grant from a *Chemical Dictionary* compiled by Ingo W. D.  
Hackh. The current, or 5th, edition of this book was prepared by Dr.  
Roger L. Grant, whose father prepared the 4th edition.

*The editors for this book were Betty J. Sun and Susan Thomas,  
the designer was Naomi Auerbach, and the production  
supervisor was Teresa F. Leaden. It was set in Palatino  
by University Graphics, Inc.*

*Printed and bound by R. R. Donnelley & Sons Company.*

- A hydrocarbon from coal tar distillates. Colorless needles, m.95, insoluble in water; used in organic synthesis. bi ~ Biacene. 1,2-dioxo ~ Acenaphthenequinone.
- a. dione Acenaphthenequinone.
- acenaphthenequinone  $C_{12}H_6O_2$  = 182.2.
- Dioxoacenaphthene. Colorless crystals, m.261, soluble in alcohol.
- acenaphthenone  $C_{12}H_8O$  = 168.2. Colorless crystals, m.121, soluble in alcohol.
- acenaphthynyl\* The radical  $C_{12}H_9$ —, from acenaphthene.
- acenaphthylene\*  $C_{12}H_8$  = 152.2. An unsaturated hydrocarbon from acenaphthene. Colorless crystals, m.92, insoluble in water. 1,2-dihydro ~ Acenaphthene.
- acene Suffix indicating 5 or more fused benzene rings in a linear configuration.
- Acer A genus of broad-leaved deciduous trees commonly known as the maples. A. saccharum Sugar maple.
- acerdese Manganite.
- acerdol Calcium permanganate.
- aceric acid Impure malic acid from the sap of the maple (*Acer rubrum*).
- aceritol See *acertannin*.
- aceroides gum Misnomer for *acaroid resin*.
- acertannin  $C_{20}H_{20}O_{13} \cdot (2 + 4H_2O)$  = 468.4. A *pyrogallol tannin*, q.v. Hydrolysis by tannase produces gallic acid and aceritol.
- acesulfame potassium 6-Methyl-1,2,3-oxathiozane-4-one-2,2-dioxide. A sweetener, 200 times as sweet as sucrose.
- acet (1) Indicating the group  $MeC\equiv$ ; as in the acetyl radical,  $MeCO\cdot$ . (2) The acetyl\* radical.
- acetal  $MeCH(OEt)_2$  = 118.2. 1,1-Diethoxyethane\*, diethylacetal. Colorless liquid, d.0.831, b.103, slightly soluble in water; solvent and intermediate in chemical synthesis. Cf. *acetals*. amino ~ See *aminoacetal*. dichloro ~ See *dichloroacetal*. trichloro ~ See *trichloroacetal*.
- a. diethyl Acetal.
- acetaldehyde\*  $CH_3\cdot CHO$  = 44.1. Ethanal\*, aldehyde, ethyl aldehyde, acetic aldehyde. Colorless aromatic liquid, b.20.8, soluble in water, alcohol, or ether. Used as a solvent and reducing agent (silvering mirrors), and in the manufacture of organic compounds. amino ~  $H_2N\cdot CH_2\cdot CHO$  = 59.1. Glycine aldehyde. Readily polymerizes. Stable in conc. acid solutions. benzoyl ~ See *Benzoylacetalddehyde\**.
- benzylidene ~ *Cinnamaldehyde\**. hydroxy ~ Glycolaldehyde\*: *met(a)* ~ Metaldehyde. oxo ~ Pyruvaldehyde\*. para ~ Paraldehyde. pentyl ~ Hexanal\*. phenyl ~  $\alpha$ -Tolualdehyde. tribromo ~ Bromal. trichloro ~ Chloral. trimethyl ~ Pivaldehyde\*.
- a. ammonia  $CH_3\cdot CHO\cdot NH_2$  = 61.1. 1-Aminoethanol\*. Addition compound of aldehyde and ammonia. Solid, m.97; soluble in water. a. cyanohydrin  $CH_3\cdot CHO\cdot CN$  = 71.1. Liquid, b.183 (decomp.), soluble in water. a. semicarbazone  $Me\cdot CH\cdot N\cdot NHCONH_2$  = 101.1. Solid, m.162.
- acetaldol Aldol.
- acetaldoxime Aldoxime.
- acetaldoxine  $Me\cdot CHNO$  = 58.1. Colorless crystals or liquid, d.0.9645, m.13, b.114, soluble in alcohol.
- acetalphenaphthylamine Acetnaphthalide.
- acetals\* Compounds containing the group  $=C(OR)_2$ .
- hemi ~ Compounds containing the group  $=C(OH)OR$ , as glucose. ketone ~ Acetals\*, ketals.
- acetamide\*  $Me\cdot CO\cdot NH_2$  = 59.1. Ethanamide. Colorless crystals, m.82, soluble in water; used in organic synthesis.
- acetyl ~ Diacetamide\*. benzyl ~  $\alpha$  ~ Hydrocinnamamide. N ~ Benzylacetamide.
- benzylidene ~ Cinnamamide. bromo ~ Acetbromamide.
- cyan ~  $CN\cdot CH_2\cdot CO\cdot NH_2$  = 84.1. Colorless crystals, m.118.
- di ~ See *diacetamide*. dichloro ~  $CHCl_2\cdot CO\cdot NH_2$  = 128.0. Colorless crystals, m.98, soluble in water.
- hydroxy ~ Glycolamide. phenyl ~  $\dagger$  N-Acetanilide.  $\alpha$ -Toluidide.
- a. chloride  $Me\cdot CCl_2\cdot NH_2$  = 114.0, b.90. a. nitrate  $MeCO\cdot NH_2\cdot ONO_2$  = 122.1. Colorless crystals, formed by the action of nitric acid on a.
- acetamidine\*  $C_2H_6N_2$  = 58.1. Ethanamidine, m.166.
- acetamido\* Indicating the  $MeCO\cdot NH$ — radical. a. ethylsalicylic acid Benzacetin. a.naphthol  $C_{12}H_{11}O_2$  = 201.2. 1,2- ~ White leaflets, m.235. 1,4- ~ White needles, m.187. a.phenetol Phenacetin. a.phenol  $C_6H_4(OH)\cdot NH\cdot CO\cdot Me$  = 151.2. 1,2- ~ White leaflets, m.201. 1,3- ~ Colorless needles, m.149. 1,4- ~ Acetaminophen.
- acetamino The acetamido\* radical.
- acetaminophen  $C_6H_4(OH)\cdot NH\cdot CO\cdot Me$  = 151.2. 4-Hydroxyacetanilide, paracetamol, Liquiprin, Panadol, Tylenol. White, bitter crystals, m.171, soluble in water; an analgesic and antipyretic for moderate pain (USP, EP, BP).
- acetanilide  $PhNH\cdot CO\cdot Me$  = 135.2. N-phenylacetamide†, Antifebrin. Colorless leaflets, 114, soluble in water; formerly used as antipyretic, antirheumatic; a preservative. aceto ~  $MeCOCH_2\cdot CONHPh$  = 177.2. Colorless crystals, m.85.
- acetyl ~ Diacetanilide. amino ~  $NH_2C_6H_4\cdot NH\cdot CO\cdot Me$  = 150.2. para ~ Colorless crystals, m.160. bromo ~ Acetbromoanilide. di ~  $PhN(MeCO)_2$  = 177.2. Colorless leaflets, m.37. ar-ethoxy ~ Acetophenetide. p-ethoxy-Phenacetin. ar-methoxy ~ Acetanilide. ar-methyl ~ Acetotoluide.  $\alpha$ -phenyl ~  $\alpha$ -Toluanilide.
- acetanilide  $C_6H_4(OMe)NH\cdot COMe$  = 165.2.
- Methoxyacetanilide. ortho- ~ Colorless crystals, m.80, soluble in water.
- acetarsol  $C_6H_3\cdot OH\cdot (NHCOME)AsO\cdot (OH)_2$  = 275.1. Stovarsol, acetarsone, 3-acetamido-4-hydroxyphenyl-arsonic acid. White powder, slightly soluble in water; an antiprotozoan; formerly used to treat syphilis. Cf. *carbarsone*.
- acetarsone Acetarsol.
- acetate Ac. A salt of acetic acid containing the  $CH_3COO$ — radical. A. are readily decomp. by strong acids or heat.
- acetazolamide  $C_4H_6O_3N_4S_2$  = 222.2. N-(5-sulfamoyl-1,3,4-thia-diazol-2-yl) acetamide. White crystals, m.258, slightly soluble in water. An inhibitor of carbonic anhydrase; a diuretic, used to treat glaucoma (USP, BP).
- acetbromamide  $CH_2Br\cdot CONH_2$  = 138.0. Bromoacetamide. Colorless leaflets, m.108, soluble in ether. N- ~  $CH_3CONHBr$ .
- acetbromoanilide  $BrC_6H_4NHCOCCH_3$  = 214.1. para ~ Colorless needles, m.165.
- acetene Ethylene\*.
- acetenyl Ethynyl\*.
- Acetest Trademark of tablet for testing for acetone in urine; contains nitroprusside.
- acet extract See *extract*.
- acethydrazide A compound containing the  $NH_2\cdot NH\cdot CO\cdot CH_2$ — radical. Cf. *hydrazide*.
- acetic Describing compounds containing acetyl,  $CH_3CO$ —. a. aldehyde Acetaldehyde\*. a. anhydride\*.  $(MeCO)_2O$  = 102.1. Ethanoic anhydride, acetyl oxide, acetic acid anhydride. Colorless liquid, b.137, soluble in alcohol; a reagent. a. ester, a. ether Ethyl acetate\*. a. peracid Peracetic acid\*. a. peroxide  $(CH_3CO)_2O_2$ . An explosive derivative of a. anhydride.
- acetic acid\*  $CH_3\cdot COOH$  = 60.1. Ethanoic acid, ethylic acid, vinegar acid, acetone carboxylic acid (USP, NF, BP). (1) 99.5% (glacial). Clear, colorless liquid or crystalline mass miscible

ethaldehyde Hexadecanal\*.  
 ethalic acid Palmitic acid\*.  
 ethambutol hydrochloride  $C_{10}H_{24}O_2N_2 \cdot 2HCl = 277.2$ .  
 Myambutol. White crystals, m. 201, soluble in water. An  
 antituberculous drug used with others to prevent  
 development of resistant strains of bacilli (BP).  
 ethamine Ethylamine\*.  
 ethamolin Ethanolamine.  
 ethanal\* Acetaldehyde\*. hydroxy ~ Glycolaldehyde\*.  
 trichloro ~ Chloral. e. acid Glyoxalic acid.  
 ethanamide Acetamide\*.  
 ethanamidine Acetamidine\*.  
 ethane\*  $C_2H_6 = 30.07$ . Methylmethane, dimethyl,  
 ethylhydride. An alkane. Colorless gas,  $d_{400} = 1.049$ , m. -172,  
 b. -86, slightly soluble in water; a constituent of natural gas.  
 The ethyl ( $C_2H_5-$ ), ethylene ( $-CH_2-CH_2-$ ), ethylidyne  
 ( $\equiv C-Me$ ), and ethanediylidene ( $=CH-CH=$ ) radicals are  
 derived from ethane. Unsaturated hydrocarbon derivatives  
 include ethene\* (ethylene\*),  $CH_2=CH_2$ , and ethyne\*  
 (acetylene\*),  $CH \equiv CH$ . amino ~ Ethylamine\*. bromo ~\*,  
 chloro ~\*, etc. See ethyl bromide, ethyl chloride, etc.  
 dibenzyl ~ See dibenzylethane. dibromo ~\*, dichloro ~\*,  
 etc. See ethylene dibromide, ethylene dichloride, etc.  
 dihydroxy ~ Glycol\*. diphenyl ~ Dibenzylethane.  
 hexabromo ~ See hexabromoethane. hexachloro ~ See  
 hexachloroethane. hydroxy ~ Ethanol\*. nitro ~ See  
 nitroethane. nitroso ~ See nitrosoethane. perchloro ~  
 Hexachloro e. phenyl ~ Ethylbenzene. triethoxy ~\*  
 Ethylidyne triethyl ether.  
 e.dial\* Glyoxal\*. e.diamide Oxamide\*. e.diamine\*  
 Ethylenediamine\*. e.dinitrile\* Cyanogen. e.dioic acid\*  
 Oxalic acid\*. e.diol\* Glycol\*. e.dioyl The oxalyl\* radical.  
 e.dioyl chloride Oxalyl dichloride\*. e.dithiol\* Dithioglycol.  
 1,2-e.diylyl See ethylene (2). e.nitrile\* Acetonitrile\*.  
 e.sulfonic acid\* Ethylsulfonic acid. e.sulfonic acid\*  
 Ethylsulfonic acid. e.thial\* Sulfaldehyde. e.thiol\*  $EtSH =$   
 62.1. Ethyl mercaptan, ethyl hydrosulfide\*. Colorless liquid,  
 b. 37, slightly soluble in water; an odorous constituent of  
 feces. e. thioamide Thioacetamide\*. e.thiolic acid  
 Thioacetic acid\*.  
 ethanediylidene\* The radical  $=CH-CH=$ .  
 ethanite A synthetic rubber, prepared by subjecting natural  
 gas to a heating and cooling process.  
 ethano\* Prefix indicating a  $-CH_2-CH_2-$  bridge.  
 Ethanograph See breath alcohol.  
 ethanoic acid\* Acetic acid\*. dihydroxy ~ Glyoxylic acid\*.  
 e.a. anhydride Acetic anhydride\*.  
 ethanol\*  $C_2H_5O = 46.07$ . Ethyl alcohol\*, alcohol, spirit,  
 spirit of wine, grain alcohol, absolute alcohol, ethyl hydrate,  
 etc. (1) Et. OH. Absolute alcohol, dehydrated alcohol.  
 Colorless liquid,  $d_{40}^{20} = 0.78505$ , m. -117.3, b. 78.3, miscible with  
 water or ether; a reagent and solvent. (2) 99% alcohol and  
 lower concentrations. Used extensively for tinctures and  
 pharmaceutical preparations, as a solvent and preservative, as  
 an antiseptic, and in perfumery (USP, BP). (3) Grain alcohol,  
 cologne spirits. Colorless liquid (ethanol 90, water 10%). (4)  
 Diluted alcohol, proof spirit. Colorless liquid, ethanol about  
 49, water 51% (by weight). (5) Denatured alcohol. Alcohol  
 made unpotable by the addition of substances such as  
 methanol, pyridine, formaldehyde, or other denaturant. Used  
 in industry, the arts and commerce, principally as a solvent or  
 fuel. See also methylated spirit. amino ~ Colamine.  
 butoxy ~ Butyl Cellosolve. chloro ~ Ethylene  
 chlorohydrin. cyano ~ Ethylene cyanohydrin. ethoxy ~\*  
 Cellosolve. imino ~ See iminoethanol. oxybis ~  
 Diethylene glycol. phenyl ~ See phenylethanol.

tribromo ~ See tribromoethanol. trichloro ~ See  
 trichloroethanol. trimethyl ~ tert-Butyl methanol.  
 ethanolamine  $NH_2(CH_2)_2 \cdot OH = 61.1$ . 2-Aminoethanol\*,  $\beta$ -  
 hydroxyethylamine, monoethanolamine. Colorless liquid,  
 d. 1.04,  $b_{150mm} = 171$ , soluble in gasoline; used for injections and  
 sclerosing (BP), and for dry cleaning. di ~ See  
 diethanolamine. tri ~ See triethanolamine.  
 ethanolate\* Ethylate, ethoxide. A compound derived from  
 ethanol by replacing the OH group hydrogen by a  
 monovalent metal (M); as, MOEt.  
 ethanoyl The acetyl\* radical.  
 ethene\*  $C_2H_4 = 28.05$ . (1)\* Ethylene, q.v. olefiant gas.  
 Colorless, flammable gas of peculiar odor,  $d_{air} = 0.978$ ,  
 b. -103, slightly soluble in water. From ethene the radicals  
 vinyl,  $-CH=CH_2$ , and vinylene,  $-CH=CH-$ , are derived. An  
 important intermediate for polyethylene, polystyrene, PVC,  
 SBR, and polyester. (2) The radical ethylene\*. 1,2-e.diylyl  
 See vinylene. e. series Alkenes\*, olefins. The homologs of  
 ethene; a group of aliphatic hydrocarbons, q.v.,  $C_nH_{2n}$ .  
 ethenium The organic cation  $MeCH_2^+$ .  
 etheno\* Prefix indicating a  $-CH=CH-$  bridge. Cf. ethano-  
 ethenol\* Vinyl alcohol\*.  
 ethenone\* Ketene\*.  
 ethenyl (1) The ethylidyne\* radical. (2)† The vinyl\* radical.  
 ethenylidene† The vinylidene\* radical,  $=CH:CH_2$ .  
 ether (1)\* See ethers. (2)\*  $C_4H_{10}O = 74.1$ . Ethylic ether,  
 ethyl oxide, ethoxyethane, diethyl ether\*, sulfuric ether.  
 Colorless liquid, d. 0.720, b. 35, slightly soluble in water,  
 miscible with alcohol. A reagent and solvent for fats, resins,  
 alkaloids, and an anesthetic (USP, BP). (3) Physics: (A) ether.  
 A hypothetical, all-pervading medium of the universe; once  
 believed the source of radiation, light, heat, and electricity. Cf.  
 etheron. acetic ~ Ethyl acetate\*. aldehyde ~ Croton  
 aldehyde\*. allyl ethyl ~  $EtOCH_2CH:CH_2 = 86.1$ . 3-  
 Ethoxypropylene. Colorless liquid, b. 66, insoluble in water.  
 anesthetic ~ Ether (2). anhydrous ~ Ethyl ether which  
 has been distilled over sodium; a reagent and solvent. butyl  
 ethyl ~  $BuOEt = 102.2$ . Colorless liquid, b. 92, insoluble in  
 water. decachloro ~ Perchloro ether. dichloro ~  
 Dichloroethyl ether. diethyl ~ Ether (2). dihexadecyl  
 ~  $(C_{16}H_{33})_2O = 466.9$ . Cetyl ether. White leaflets, m. 55,  
 soluble in water. dimethyl ~ See methyl ether under  
 methyl. ethyl heptyl ~  $C_7H_{15}OEt = 144.3$ . Oenanthalic  
 ether. Colorless oil, d. 0.840, b. 143, insoluble in water; used in  
 flavoring extracts and in organic synthesis. formic ~ Ethyl  
 formate\*. hydrobromic ~ Ethyl bromide\*. hydrochloric  
 ~ Ethyl chloride\*. hydrocyanic ~ Ethyl cyanide\*.  
 hydroiodic ~ Ethyl iodide\*. isopropyl ~ See propyl ether.  
 methyl ~ See methyl ether. methyl n-naphthyl ~\*  
 $MeOC_{10}H_7 = 158.2$ . Methoxynaphthalene. ~ 1-naphthyl  
 ~ b. 265. ~ 2-naphthyl ~ Jara-jara. m. 72; used in  
 perfumes. methyl pentyl ~  $MeOC_5H_{11} = 102.2$ . b. 92.  
 petroleum ~ See petroleum ether. sulfuric ~ Ether (2).  
 e. acid An acid ester, q.v. e. alcohol A compound of the  
 type  $R \cdot O \cdot R' \cdot OH$ ; as, the diether of a dihydric alcohol. e. of  
 crystallization The molecules of e. as a component part in a  
 crystal lattice.  
 ethereal Resembling or made with ether. e. fruit oil See  
 ethereal fruit oil under oil. e. liquid A highly volatile liquid.  
 e. oil Essential oil. e. salt Ester.  
 etherene Ethylene\*.  
 etheric acid Acetoacetic acid\*.  
 etheride A compound containing the radical  $-COX$ ; X is a  
 halogen.  
 etherification The process of making an ether from an  
 alcohol. Cf. ethers.

Colorless prisms, m.98, soluble in water. e. succinyl succinate\*  $C_{12}H_{16}O_6$  = 256.3. Green prisms, soluble in water (blue fluorescence). e. sulfas E. sulfate. e. sulfate  $Et_2SO_4$  = 154.2. Normal e. sulfate, diethyl sulfate\*. Colorless oil with peppermint odor, d.1.184, b.208, insoluble in water. acid ~, mono ~ E. hydrogensulfate\*. e. sulfinic acid  $Et \cdot SO \cdot OH$  = 94.1. Ethanesulfinic acid\*. Colorless syrup, an isolog of propionic acid. e. sulfite Diethyl sulfite. e. sulfohydrate Ethanethiol\*. e. sulfone Diethyl sulfone\*. e. sulfonic acid  $EtSO_3 \cdot OH$  = 110.1. Ethanesulfonic acid\*. Colorless, deliquescent crystals, soluble in water. e. sulfonic chloride  $EtSO_2Cl$  = 128.6. Ethanesulfonyl chloride. Colorless liquid, b.177, decomp. by water. e. sulfonic oxide Diethyl sulfoxide. e. tartrate  $EtOOC(CHOH)_2COOEt$  = 206.2. E. racemate, diethyl tartrate\*. Colorless liquid, b.280, slightly soluble in water; a solvent for nitrocellulose, gums and resins. e. tartronic acid\*  $C_5H_8O_5$  = 148.1. Colorless scales, m.116 (decomp.), soluble in water. e. telluride  $Et_2Te$  = 185.7. Tellurium ethyl. A heavy, red oil, giving off yellow fumes. e. ditelluride  $Et_2Te_2$  = 313.3. Diethyl ditelluride\*. e. pertelluride. A dark-red liquid decomp. by water. e. terephthalate  $C_6H_4(COOEt)_2$  = 222.2. E. p-phthalate. Colorless liquid, b.119, insoluble in water. e. thioalcohol Ethanethiol\*. e. thiocarbonate (1)  $CS(EtO)_2$  = 134.2. A liquid, d.1.028, b.162. (2)  $(EtS)_2CS$  = 166.3. Yellow oil of unpleasant odor; isolog of e. carbonate and e. sulfite. e. thiocyanate\*  $EtSCN$  = 87.1. E. sulfocyanide. Colorless liquid, b.148, insoluble in water. e. iso ~  $EtNCS$  = 87.1. E. mustard oil. Colorless liquid,  $b_{753mm}$  131, insoluble in water. e. tin tribromide\*  $EtSnBr_3$  = 387.5. Colorless needles, m.310, soluble in water. e. toluate\*  $MeC_6H_4COOEt$  = 164.2. e. ortho ~ Colorless liquid, b.221, insoluble in water. e. meta ~ Colorless liquid, b.228, insoluble in water. e. para ~ Colorless liquid, b.229, insoluble in water. e. toluene E. methylbenzene. e. urethane See *ethylurethane* under *urethane*. e. valerate  $BuCOOEt$  = 130.2. Colorless liquid, b.145, insoluble in water. e. vanillate\*  $C_{10}H_{12}O_4$  = 196.15. Colorless crystals, m.44, insoluble in water. e. vanillin See *ethyl vanillin* under *vanillin*. e. vinyl ether\*  $EtO \cdot C_2H_3$  = 72.1. Colorless liquid, b.36, soluble in water. e. violet An indicator changing at pH 2.0 from blue-green (acid) to purple (alkali). e. xylene Ethyldimethylbenzene.

**ethylal** Acetaldehyde\*.

**ethylamine\*** See *ethylamine* under *ethyl*.

**ethylate** Ethanolate\*.

**ethylation** The introduction of an ethyl group into a compound.

**ethylene** (1)\* Ethene\*, q.v. (2)\* 1,2-Ethanediyl†, acetene, elayl. The radical  $-CH_2 \cdot CH_2 \cdot$ . Cf. *ethylidene*. azi ~ Diazoethane. bromo ~ Vinyl bromide\*. chloro ~ Vinyl chloride\*. di ~ See *diethylene*. dichloro ~  $ClHC \cdot CHCl$  = 96.6. Acetylene dichloride, dioform. cis ~ b.48. trans ~ b.60. Colorless liquids, immiscible with water. diethyl ~ 3-Hexene\*. dimethyl ~ 2-Butene\*. diphenyl ~ Stilbene\*. oxo ~ Ketene\*. pentyl ~ Heptene\*.

perchloro ~ See *tetrachloroethylene*. phen ~, phenyl ~ Styrene\*. poly(chlorotrifluoro ~) See *poly(chlorotrifluoroethylene)*. tetrachloro ~ See *tetrachloroethylene*. tetraiodo ~ Diiodoform. tetraphenyl ~ See *tetraphenylethylene* under *tetraphenyl*. trimethyl ~ See *trimethylethylene* under *trimethyl*. vinyl ~ 1,3-Butadiene\*.

e. acetate E. diacetate\*. e. alcohol Glycol\*. e. aldehyde Acrylaldehyde\*. e. benzoate  $Ph \cdot COO \cdot CH_2 \cdot CH_2 \cdot OOC \cdot Ph$  = 270.3. Colorless prisms, m.73, insoluble in water. e. bromide E. dibromide\*. e. bromohydrin Glycol

bromohydrin. e. carboxylic acid Acrylic acid\*. e. chlorohydrin  $ClCH_2 \cdot CH_2OH$  = 80.5. Chloroethyl alcohol, 2-chloroethanol\*, 1-hydroxy-2-chloroethane. Colorless liquid, b.128, miscible with water. Used in organic synthesis, and in forcing the sprouting of plants. commercial ~ A 40% solution, d.1.097, b.96, used to introduce the OEt group into a molecule. e. chloride E. dichloride\*. e. cyanohydrin  $C_3H_5ON$  = 71.1. 2-Cyanoethanol\*, 1-hydroxy-2-cyanoethane. Colorless liquid, m.221, miscible with water. e. cyanide E. dicyanide\*. e. diacetate\*  $(MeCOOCH_2)_2$  = 146.1. Colorless liquid, b.186, soluble in water. e. diamine\*  $NH_2CH_2 \cdot CH_2NH_2$  = 60.1. Diaminoethane, 1,2-ethanediamine\*, in ptomaines. Colorless crystals, m.10, soluble in water. Cf. *sublimine*. e. hydrate Colorless liquid with an ammoniacal odor; used for aminophylline injections (USP, BP). e. tetraacetic acid  $(CH_2 \cdot COOH)_2(N \cdot CH_2)_2(CH_2 \cdot COOH)_2$  = 292.3. EDTA, versenic acid. White crystals, slightly soluble in water, decomp. above 160; made from an alkali cyanide, formaldehyde, and ethylenediamine. It forms slightly ionized complexes with alkaline earths and other elements. Used as the more soluble sodium salt, as an analytical reagent, e.g., to titrate the hardness salts of water with Eriochrome Black T as indicator; also in detergents, rubber processing, and scale prevention. Cf. *sequestering agent*. See *disodium edetate*. e. dibenzamide See *ethylene dibenzamide* under *dibenzamide*. e. dibromide\*  $BrCH_2 \cdot CH_2Br$  = 187.9. 1,2-Dibromoethane\*, e. bromide, glycol dibromide. e. dicarbonitrile E. dicyanide\*. e. dicarboxylic acid cis ~ Maleic acid\*. trans ~ Fumaric acid\*. e. dichloride\*  $ClCH_2 \cdot CH_2Cl$  = 99.0. 1,2-Dichloroethane\*, e. chloride, elayl chloride, vinylene chloride, Dutch liquid. Colorless liquid, b.84, slightly soluble in water. Used in organic synthesis, as a solvent for lacquers and fats, and as a textile cleanser. Cf. *dichloroethylene*. e. dicyanide\*  $C_4H_4N_2$  = 80.1. Succinonitrile\*, e. cyanide, 1,2-dicyanoethane\*. Colorless crystals, m.54, soluble in water. e. diethanolate  $EtO \cdot CH_2CH_2OEt$  = 118.2. Diethyl glycol ether. e. dihydrate Glycol\*. e. diiodide\*  $(CH_2I)_2$  = 281.9. Diiodoform, e. iodide, 1,2-diiodoethane\*. Yellow prisms, m.81, slightly soluble in water. e. dinitrate  $(CN_2NO_3)_2$  = 152.1. EGDN, e. nitrate. Yellow liquid, exploded by heat or impact, insoluble in water. e. dinitrite  $(CH_2NO_2)_2$  = 120.1. Glycol dinitrite. Colorless liquid, b.96, insoluble in water. e. dioxide Dioxane. e. dioxy\* The radical  $-OCH_2 \cdot CH_2O \cdot$ . e. diphenolate E. diphenyl ether. e. diphenyldiamine  $C_{14}H_{16}N_2$  = 212.3. Colorless crystals, m.59, insoluble in water. e. diphenyl ether  $C_{14}H_{14}O_2$  = 214.3. E. diphenolate. Colorless crystals, m.98, sparingly soluble in water. e. dithiol\*  $HS \cdot CH_2 \cdot CH_2 \cdot SH$  = 94.2. Glycol sulfohydrate, e. disulphhydrate, dithioethylene glycol. Colorless liquid, b.146, soluble in alcohol. e. disulphhydrate E. dithiol\*. e. disulfonic acid Ethionic acid. e. glycol\* Glycol\*. e. g. dinitrate E. dinitrate. e. g. ethyl ether Cellosolve. e. hydride Ethane\*. e. monoacetate Glycol acetate. b.187. e. naphthalene Acenaphthylene\*. e. oxide\*  $(CH_2)_2O$  = 44.5. Oxirane\*, dimethylene oxide, 1,2-epoxyethane\*. Colorless gas,  $b_{746mm}$  14, soluble in water. E. oxide is used to make e. glycol and thence Terylene. e. perchloride Carbon dichloride\*. e. periodide Diiodoform. e. series See *olefin*. e. sulfate acid ~  $C_2H_4(HSO_4)_2$  = 222.2. E. sulfuric acid. A colorless syrup. basic ~  $(OH)_2C_2H_4(HSO_4)$  = 142.1. E. hydroxysulfuric acid; known only as its compounds. e. sulfide  $CH_2 \cdot S \cdot CH_2$  =

60.1. Thiirane, dimethylene sulfide. Liquid, b.55, polymerizes rapidly. e. sulfonic acid Ethionic acid. e. sulfuric acid See *e. sulfate* above. e. tetrabromide\* Tetrabromoethane\*.

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